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GENESEE RIVER BASIN STUDY. ADDITIONS TO SUMMARY REPORT.(U)  
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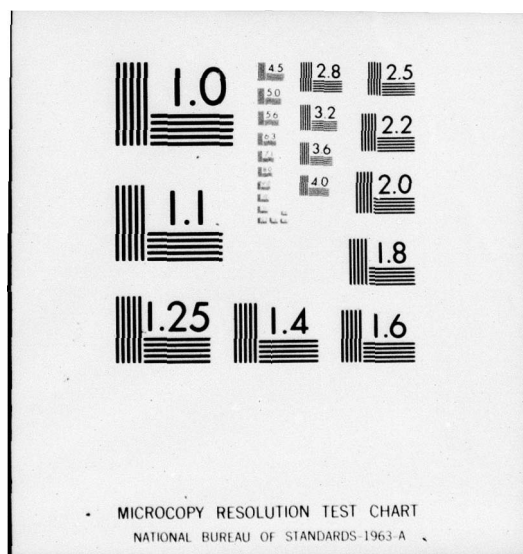
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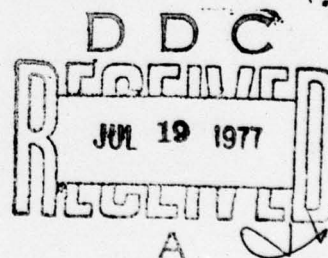
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# GENESEE RIVER BASIN STUDY.

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## ADDITIONS TO SUMMARY REPORT.

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PREPARED FOR THE COORDINATING COMMITTEE  
BY  
THE BUFFALO DISTRICT, CORPS OF ENGINEERS  
DEPARTMENT OF THE ARMY

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SEPTEMBER 1969

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GENESEE RIVER BASIN STUDY

ADDITIONS  
TO  
SUMMARY REPORT

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GENESEE RIVER BASIN STUDY  
ADDITIONS  
TO  
SUMMARY REPORT

PURPOSE

✓  
A1. This addition to the "Summary Report" Genesee River Basin Study is to briefly discuss change conditions and/or criteria which would necessitate major revisions in the report. The Coordinating Committee felt that major changes should not be made at this late point in time owing to personnel and funding restraints. They desire this addition to act to alert those agencies that make later studies within the basin of the areas of change in the data presented in the "Summary Report" and appendices.

↑  
STANNARD RESERVOIR

A2. PHYSICAL DESCRIPTION

Stannard multiple-purpose reservoir site is located in the headwaters of the Genesee basin in Allegany County, New York and Potter County, Pennsylvania, and in Sub-region F of the Appalachian Region. The damsite is located about four miles south of Wellsville, New York controlling 165 square miles of drainage area. The location and pertinent data are given in Volume II, Appendix "C" of the Genesee River Basin report.

A3. Major physical features of the project would be the 2,300-foot long earth fill dam, a 190-foot wide gated spillway, approximately 1,600 feet of

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levee on Marsh Creek, and recreation areas with appropriate public-use facilities surrounding a reservoir having a total storage capacity of 97,500 acre-feet.

#### A4. CHANGE CONDITIONS

The Genesee River Basin Coordinating Committee early in the study concluded that project analysis would be oriented to the primary criterion of economic efficiency as reflected in the comparison of tangible benefits and project costs. As a result, the Stannard Reservoir project was screened out of the "Recommended Early-Action Plan" for the basin as being economically unfeasible.

A5. The Genesee study was well underway when the counties, Allegany and Potter, in which the reservoir is located became part of the Appalachian Study. The data compiled for the reservoir during the Genesee study were given to personnel involved in the Appalachian Study. The project was evaluated using Appalachia criteria and found to be feasible.

A6. The Coordinating Committee at their tenth meeting, 10-11 June 1969 concluded that the impact of Stannard Reservoir on the Genesee River basin must be recognized even though it is not considered in their Early-Action plan. The reservoir will be a physical feature in the basin with a beneficial effect.

A7. PROJECT PURPOSES

The reservoir project has been planned to provide the services needed to satisfy the water related needs of the area, and thereby encourage development of the upper Genesee River Basin. The specific benefits realized from the project would be:

- a. Flood damage reduction;
- b. Water supply for industrial use and irrigation;
- c. Water quality control;
- d. Fish and wildlife enhancement;
- e. Outdoor recreation opportunities; and
- f. Economic development.

A8. The average annual flood damages to present and future developments between the reservoir site and Belmont, located approximately 15 miles downstream, would be reduced approximately 70 percent. Approximately one-third of the reservoir storage would be used to improve the quality of flows in the vicinity of Scio and outside of the Appalachian Region in the Gates-Chili-Ogden area, approximately 14 miles above the mouth of the Genesee River. Fish enhancement would be supplied for some 156,000 fisherman-days annually by the project through regulated releases for downstream trout fishery, through provision of a controlled, stocked reservoir with supporting facilities and access points around the reservoir. Limited hunting would be permitted wherever it would be consistent with safety of other recreationists and where adequate game might be available.



General outdoor recreation would be improved for about 233,000 users annually by provision of adequate recreation facilities. By providing three downstream access sites white-water canoeing and small access site benefits for canoers and spectators would accrue to about 105,000 users annually. The Stannard project would provide a water supply to meet daily flows of 95 cfs for a proposed pulp and paper mill, assuming the equivalent of good secondary treatment, and for supplemental irrigation of approximately 5,800 acres located in Allegany County, downstream of Wellsville. Economic development of the area of influence of the project would be supported through provision of additional job opportunities, both during and after project construction.

#### A9. COSTS AND BENEFITS

Costs for constructing Stannard Reservoir and the recreational facilities are estimated at 37.5 million dollars; annual charges are estimated to be \$1,490,000. Comparable values for induced investments are 20.2 million dollars with annual charges of \$1,180,000. Annual benefits for the development are estimated as follows:

	INCOME	
	National	Regional
	\$	\$
Users	2,145,000	1,708,000
Expansion effects		
Redevelopment	56,400	349,000
Development	380,600	5,161,000
Loss of income from lands taken for project	-54,000	-460,000

A10. Using the preceding, the index of performance of the objective of increasing national income would be 1.4, and for increasing regional income, 1.9.

A11. COOPERATION REQUIRED FOR CONSTRUCTION

The Corps of Engineers would construct the dam, reservoir and initial recreation facilities, and operate the dam. The State of New York would construct future recreation facilities and share in the construction costs of all of the recreation facilities. The State of New York would also operate and maintain all of the recreation facilities.

A12. The State of New York will be requested to provide assurances of local cooperation for cost sharing in the costs allocated to water supply and irrigation. Assurances for the irrigation costs would be furnished after local interests have formed the required "Irrigation Districts" with technical assistance supplied, if needed, by the United States Department of Agriculture.

A13. Prior to construction, local interests should furnish assurances that they will: establish encroachment lines to permit efficient reservoir operation; contribute to pollution control by providing adequate treatment or other waste control methods; to the full extent of their local capability, exercise control against diversion of streamflow available for water quality control; and, within statutory limits, adopt and enforce flood plain management regulations to guide future developments

within the floodplain away from locations which are threatened by flood hazards to minimize future flood damages.

A14. NEEDS THAT POTENTIALLY CAN BE MET BY STANNARD RESERVOIR

The needs which could be met by development of water and related land resources of the upper Genesee River by Stannard Reservoir under Appalachia-criteria are discussed briefly in the following paragraphs.

A15. With the conservation pool of the considered Stannard Reservoir project at elevation 1620, available flood control storage to top of gates elevation 1622 would be 4,000 acre-feet during the summer months. Available storage during the remaining months would depend upon the seasonal drawdown. The available storage in the Stannard Reservoir Project would significantly reduce the scale of flood damages expected to occur downstream in the absence of further flood protection, but will not completely eliminate the flood problem. Further, the project will increase the reliability of an existing local protective works, including a rectification of deficiencies, located downstream at Wellsville. The Stannard project would free for higher development uses desirable lands along the Genesee, downstream from the project site to Belmont.

A16. Available streamflow, augmented by releases from the Stannard project would satisfy downstream water supply and water quality needs for a 100-to 125-ton per day capacity sulphate pulp and paper mill and for supplemental irrigation of approximately 5,800 acres located in



Allegany County, New York. Daily flows of 95 cfs will be required by the proposed mill assuming the equivalent of good secondary treatment. The 5,800 acres represent the irrigable lands in the Genesee River valley in Allegany County. A strong interest has not been shown by the local farmers for this practice to date. However, as irrigation becomes economically feasible due to changing agriculture and other economic factors, this practice may become more applicable in the future. As the Appalachian plan should represent all interests and provide for the needs of the area, both present and future, it will be very desirable to allocate 5,800 acre feet of storage for future irrigation needs. This storage could be used for other purposes such as recreation until the time when it is needed for agricultural purposes.

A17. Low flow requirements for the Genesee River reach below the Gates-Chili-Ogden treatment plant would mainly be met by providing the flows required by the proposed mill.

A18. The need for water-based recreation opportunity in Sub-region F of the Appalachian Region is expected to increase rapidly in the foreseeable future. Investigations by the Bureau of Outdoor Recreation reported in Appendix F, of the Report for Development of Water Resources in Appalachia, indicate that the need in recreation days in 1980 is 74.3 million; in 2000 is 176.8 million; and in 2020 is 408.4 million. The Recreation Task of the Genesee River Basin Study has indicated this same rapid increase for the water-based recreation. The recreation need

for the Genesee is discussed in paragraphs 138 to 142 of the "Summary Report."

#### A19. CHANGES REQUIRED IN RECOMMENDED EARLY-ACTION PLAN

The inclusion of Stannard Reservoir in the Early-Action Plan for the Genesee River Basin would effect one Soil Conservation Service upland reservoir, site 3-4. This site is on Marsh Creek and would be inundated by the major damsite at Stannard. The site was considered for its aid in meeting the water-oriented recreation and fishing need in the upper Genesee basin. It would provide 97,000 recreation days and 12,500 fisherman days annually. It was an alternate for Stannard Reservoir when it was determined that Stannard was economically unfeasible in the final stages of the Genesee study. The first cost of this site would be \$2,194,000 with an annual cost of \$112,700 and annual benefits of \$117,900. This site is presently not eligible for construction by the Soil Conservation Service, under authority of Public Law 566.

#### A20. IMPACT ON GENESEE BASIN NEEDS

Stannard Reservoir would have an impact mainly on the unsatisfied needs in the field of outdoor recreation, fish and wildlife and water quality. The following table presents a comparison between the Early-Action plan as recommended in the "Summary Report" and the Early-Action plan including Stannard Reservoir.

Needs met by early-action plan

Needs	1980				2020			
	: Existing or : Early-Action :		: Early-Action :		: Early-Action :		: Early-Action :	
	: Projected : Plan (1) :		: with Stannard :		: Existing or :		: Plan (1) :	
	: Program : (Recommended) :		: Reservoir (1) :		: Projected Program : (Recommended) :		: Stannard Reservoir :	
Recreation (Market Area)	65%	21%	22%	45%	6%	6%	6%	6%
Fish & Wildlife (Influence Area)	35%	34%	45%	33%	18%	18%	23%	23%
Water Quality (Critical Sectors)	78%	80%	100%	79%	100%	100%	100%	100%
Water Supply	0%	100%	100%	0%	0%	0%	100%	100%
Irrigation								
Basin	36%	25%	25%	17%	9%	9%	33%	33%
Lake Plains	41%	164%	164%	20%	59%	59%	59%	59%
Power	0%	0%	Minor	0%	0%	0%	Minor	Minor
Flood Control								
Local Protection	80%	100%	100%	80%	100%	100%	100%	100%
Flood Plain Management	0%	100%	100%	0%	100%	100%	100%	100%
Land Treatment								
Croplands	36%	(4)%		98%	(4)%	(4)%		
Pasture	27%	(4)%		98%	(4)%	(4)%		
Forest	16%	13%	13%	67%	34%	34%		
Erosion (Streambank Control)	2%	0%	0%	2%	0%	0%	0%	0%

(1) Percentage shown is for the unmet demand above the existing or projected programs.

(2) 100%, if releases from Stannard Reservoir are included.

(3) Based on 5 major flood control projects in Basin, thus reducing damages in the only major flood damage areas of the Basin.

(4) No major acceleration of existing programs are anticipated.



## WATER QUALITY

### A21. GENERAL

The parameters investigated to establish water quality characteristics by the water quality task group included dissolved oxygen, BOD, acidity, temperature, dissolved solids and color. At the time of the task group investigations, standards had not been established by New York and Pennsylvania in accordance with the Water Quality Act of 1965.

### A22. BASIN STUDY STANDARDS

The major standards used in the Genesee study were as follows:

- a. A dissolved oxygen (DO) concentration of 4.0 milligrams per liter, as minimum acceptable;
- b. Projected waste loadings computed assuming 85 percent treatment in 1980 and 90 percent in 2020; and
- c. Minimum or design flow of 7-consecutive-day, 1-in-10-year flow.

### A23. CHANGE IN STANDARDS

It should be noted by those persons interested in the water quality management portions of this report that subsequent to completion of Appendix "H," Water Quality Management, standards were accepted and approved by the Secretary of the Interior in accordance with the requirements of the Water Quality Act of 1965 for New York and Pennsylvania.

A24. The major changes in standards for New York State are a minimum acceptable dissolved oxygen (DO) concentration of 5.0 milligrams per liter for all trout waters and a minimum or design flow of 7-consecutive-day, 1-in-50-year flow.

A25. The change in standards for Pennsylvania involve a dissolved oxygen (DO) concentration level of 6.0 milligrams per liter as a minimum daily average and no value less than 5.0 milligrams per liter for waters in the Genesee River basin.

A26. NITROGENOUS OXYGEN DEMANDS

In addition to the parameters investigated to establish the water quality for this study, the State of New York is now also evaluating the Nitrogenous Oxygen Demands (NOD) which can represent a problem in dry weather streams.

A27. Although the NOD data are not given in any tables for the study, evaluation of the Allegany County Comprehensive Sewage Study Report indicates that the following area will require advanced treatment when the sewerage projects are implemented.

<u>Stream Sector</u>	<u>% Removal by 2020</u>	
	<u>BOD</u>	<u>NOD</u>
<u>Canadea Creek</u>		
Rushford	92.0	78.0
<u>Canaseraga Creek</u>		
Canaseraga	95.0	75.0
<u>Dyke Creek</u>		
Andover	96.0	85.0
<u>Genesee River</u>		
Wellsville	90.0	85.0
<u>Van Campen Creek</u>		
Friendship	91.0	86.0

The above data on proposed sewerage projects were developed subsequent to completion of Appendix "H." The data should be helpful for future studies of the Genesee Basin Board.

A28. BENEFITS FOR PORTAGE RESERVOIR

The benefits for Portage Reservoir as shown in table 42 of this "Summary Report" include water quality benefits for the Avon stream sector and the stream sector below the Gates-Chili-Ogden area in the total amount of \$138,000. The annual costs for the alternatives, advanced treatment, would be \$55,000 for the Avon sector, \$101,000 for the Gates-Chili-Ogden sector and \$138,000 for a combination of two upland reservoir sites to supply the required low flow for the two critical sectors above. A breakdown of costs and benefits is contained in Appendix "B," Plan Formulation, Section IV, paragraph 23.

A29. Additional studies by the New York State Department of Health and F.W.P.C.A. subsequent to the completion of Appendix "B," Plan Formulation and the October 1967 public hearings indicate capacities more than double the original estimate or about 5,400 lbs/day for the Avon stream sector. This was due to a combination of higher minimum average consecutive 7-day, 1-in-10 year flows, as determined by the U.S.G.S. and higher assimilative rates.

A30. In view of the decision of the Coordinating Committee to place the Portage Reservoir project in a "Deferred" category, the water quality benefits as shown in table 42 have not been revised. The revised



benefits would require the deletion of benefits for the Avon stream sector. Thus reducing the water quality benefits from \$138,000 to a maximum of not more than \$101,000 and possibly making advance treatment for the Gates-Chili-Ogden area the most feasible alternative.

#### PUBLIC HEALTH ASPECTS

A31. It is highly desirable to alert those interested in this basin study that recent broadened concept of the "Public Health Aspects of the Water Resources" development planning have not been included in our proposed projects. These broadened aspects must be given proper consideration and included during the detailed planning of any project undertaken as a result of this study. The Public Health Service, Department of Health, Education and Welfare must be consulted in the following areas of concern:

- (a) Vector control measures both in the construction and operation of projects;
- (b) Epidemiology of water born diseases; and
- (c) Sanitary survey of water and related land resources.

#### TOTAL PROGRAM COSTS

A32. The State of New York at the request of the Coordinating Committee investigated capital costs for other anticipated programs within the Genesee River Basin study area by the year 1980. It was felt that the cost of programs for water supply, water quality and recreation not previously covered in the Coordinating Committee report should be stated

to indicate the general level of Federal and non-Federal investments in the area. The data concerning other costs in the water resources field are given in the following table. These data were compiled from sewerage and water supply figures based primarily on county consultant study reports, sponsored by the New York State Health Department. The recreation figures are based on data from the New York State Conservation Department, Division of Parks.

Additional Projected Water Resources Investments to Year 1980

Function	:	Estimated Total Capital Cost	:	Estimated Capital Cost Federal Participation
Water Supply	:	\$ 82,000,000 (1)	:	---
Water Quality	:	366,600,000 (2)	:	\$15,900,000 (4)
Recreation	:	<u>146,600,000 (3)</u>	:	<u>64,000,000 (5)</u>
TOTAL	:	\$595,200,000	:	\$79,900,000

- (1) Public water supply costs for entire counties of Allegany, Genesee, Livingston, Monroe and Wyoming.
- (2) Municipal sewerage costs for entire counties of Allegany, Genesee, Livingston, Monroe and Wyoming.
- (3) Public recreation land and facilities costs for Genesee River Basin Recreation Market Area.
- (4) Based on eligible first investment cost and current federal procedures.
- (5) Based on assumed 50 percent federal share of facility first investment cost, and current federal land grant procedures.

A33. Thus the overall short-range investment in water resources for the Genesee River Basin and service areas would be the cost of the recommended Early-Action program of this study and the cost from the preceding table. The combined investment costs are shown in the following table.

Summary of anticipated water resource costs  
for the Genesee River Basin to year 1980

Development	: Estimated : Total : Cost	: Estimated Cost : Federal Participation
<u>EARLY-ACTION PLAN</u>	:	:
33 Upland Reservoir Sites	: \$ 29,535,000:	\$ 14,717,000
Land Treatment	: 12,911,000:	-
Canaseraga Multiple-purpose	: 7,699,000:	6,865,000
Flood Plain Management (Black Creek):	26,000:	26,000
Hemlock Lake Recreation Area	: (1) :	-
Canadice Lake Recreation Area	: (1) :	-
8 Recreation Access Sites	: 1,600,000:	800,000
"3-River Rise," Natural History Area:	300,000:	150,000
Conesus Lake Wetland Area	: 540,000:	270,000
Honeoye Lake Wetland Area	: 1,000,000:	500,000
SUB-TOTAL BASIN	: \$ 53,611,000:	\$ 23,328,000
29 Reservoirs - Ontario Lake Plains	: 5,185,000:	2,593,000
SUB-TOTAL EARLY-ACTION PLAN	: \$ 58,796,000:	\$ 25,921,000
<u>APPALACHIA PROGRAM</u>	:	:
Stannard Multiple-Purpose Reservoir	: \$ 37,500,000:	\$ 31,352,000
TOTAL EARLY-ACTION PLAN	: \$ 96,296,000:	\$ 57,273,000
<u>OTHER PROJECTS</u>	:	:
Water Supply	: \$ 82,000,000:	\$ -
Water Quality	: 366,600,000:	15,900,000
Recreation	: 146,600,000:	64,000,000
GRAND TOTAL	: \$691,496,000:	\$137,173,000

(1) No Estimate



## INTEREST RATES

### A34. BASIN STUDY RATES

An interest rate of 3-1/8 percent was the accepted rate during most of the study for both Federal and non-Federal costs. The only project evaluation that differs from the 3-1/8 percent interest rate is the Portage project in which 3-1/4 percent rate was used since it was in effect at the time of project evaluation.

A35. The Coordinating Committee has discussed the recent revised interest rates approved by the Water Resources Council. It is their consensus that this study should remain with the original 3-1/8 percent interests on all projects, preliminary and survey scope, thus all projects can be compared on a common basis. It is recognized that for any project in the early-action plan which an authorization report is to be prepared, it must be re-evaluated using 4-7/8 percent interest rate or the proper rate at the time of submission of the authorization report.

A37. The above decision of the Coordinating Committee is in accordance with EC 1165-2-77, paragraph 5, dated 3 September 1969.

### A38. IMPACT OF NEW RATES

A review of most of the Corps of Engineers reservoir projects investigated during the study indicates an unfavorable benefit to cost

ratio using the then current rate of  $3\frac{1}{8}$  percent. The new rates without modification of benefit methods will only make the benefit to cost ratio even more undesirable. The Portage multiple-purpose project which was placed in the "Deferred" category had a 1.4 to 1 ratio using an interest rate of  $3\frac{1}{4}$  percent. It is certain that a rate of  $4\frac{7}{8}$  percent would produce a benefit to cost ratio at or less than unity. The comparability ratio for power on the Portage project was essentially unity with  $3\frac{1}{4}$  percent interest. Thus with the revised interest, it is doubtful if power could be a justified purpose.

A39. In the case of the Soil Conservation Service, Upland Reservoir sites in the proposed Early-Action plan must have a benefit to cost ratio considerably above unity. Therefore, the revised interest rate should have minor effect on the justification of most of the upland sites.

A40. Therefore, the impact of the new interest rates will be minor on the proposed Early-Action plan due to the projects included in the plan. The greatest effect will be on the Canaseraga multiple-purpose flood control and waterfowl habitat improvement project which is discussed in subsequent paragraphs.

A41. The impact of the new interest rate would be grave on the "Deferred" category, Portage multiple-purpose reservoir project. This impact may be reduced or eliminated as a result of the Coordinating Committee's,

Recommendation IV, which requests the Genesee Basin Board to institute as may be appropriate, an investigation of project possibilities.

#### A42. EFFECT ON THE CANASERAGA PROJECT

The Canaseraga multiple-purpose project is the only major project in the Early-Action that could be adversely effected by the increase in interest rates. The Canaseraga is a local flood control and waterfowl habitat improvement project. The total cost of the proposed project in the "Summary Report" is \$7,699,000. It was evaluated at an interest rate of 3-1/8 percent and had a benefit to cost ratio of 1.2 to 1.0.

A43. The impact of evaluating the project at an interest rate of 4-7/8 percent would be an unjustified project with a benefit to cost ratio of 0.85 to 1.0. This impact on the Early-Action plan has been discussed by the Coordinating Committee at their tenth meeting. The possibility of re-evaluating the potential benefits at the time of preparation of the "Authorization Report" by the Corps of Engineers was considered by the Coordinating Committee. It was the consensus of the members that <sup>the</sup> te Canaseraga project should remain in the proposed Early-Action plan for the basin and that a favorable benefit to cost ratio could be obtained during the "Authorization Report" phase.

A44. There are several possibilities for increasing the benefits for the project. The value for the waterfowl habitat improvement was based on an alternative cost for providing the same waterfowl habitat at a



single-purpose location. Thus the increase interest rates would increase the cost of the alternative single-purpose location and increase the benefit value per duck use day. The growth period for ultimate use by waterfowl, hunters and birdwatchers could be restudied along with the type of growth curves to be used. These factors would require additional study by Fish and Wildlife Service of the Department of the Interior.

A45. In order <sup>to</sup> demonstrate some of the possibilities for increased fish and wildlife benefits, the following table of potential revisions is presented for comparison of possible change conditions from the "Summary Report." It should be noted, that it is possible to obtain a benefit to cost ratio of unity with revisions to only the fish and wildlife benefits under certain revised conditions.

Estimate of Annual Benefits and Cost for the Proposed Canaseraga Multiple-Purpose Project

		Summary	Impact	Revised	Revised	Revised	Revised	Revised
		Report	of Revised	Value of Duck	Value of Duck	Value of Duck	Value of Duck	Value of Duck
		Evaluation	Interest	Value of	use days & growth	use days & Type	use days & Type	use days & Type
		Rate	Duck use days:	period	of growth curve	of growth curve	of growth curve	of growth curve
Total ultimate dollar value		\$124/duck	\$124/duck	\$15/duck	\$15/duck	\$15/duck	\$15/duck	\$15/duck
With project		\$346,900	\$346,900	\$419,600	\$419,600	\$419,600	\$419,600	\$419,600
Without the project dollar value								
Maximum annual amount to be discounted		122,300	122,300	148,000	148,000	148,000	148,000	157,900
Growth period		224,600	224,600	271,600	271,600	271,600	271,600	289,600
Annual interest rate		15 yrs.	15 yrs.	15 yrs.	10 yrs.	15 yrs.	15 yrs.	15 yrs.
Type of growth curve considered		3-1/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%
Straight line: Straight line: Straight line: Straight line: Straight line: Accelerate								
Average annual benefit		171,220	158,200	191,400	216,100	224,800	239,700	
Total dollar value with the project		\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500
Without the project dollar value								
Maximum annual amount to be discounted		17,500	17,500	17,500	17,500	17,500	17,500	17,500
Growth period		35,000	35,000	35,000	35,000	35,000	35,000	35,000
Annual interest rate		15 yrs.	15 yrs.	15 yrs.	10 yrs.	15 yrs.	15 yrs.	15 yrs.
Average annual benefit		3-1/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%	4-7/8%
Total Fish & Wildlife Benefits		\$26,680	24,700	24,700	27,900	29,000	29,000	29,000
Flood control benefits		\$197,900	\$182,900	\$216,100	\$244,000	\$253,800	\$268,700	\$268,700
Total benefits		194,870	194,900	194,900	194,900	194,900	194,900	194,900
Total cost		392,700	377,800	411,000	438,900	448,700	463,600	463,600
B/C Ratio		330,060	444,300	444,300	444,300	444,300	444,300	444,300
		1.19	0.85	0.93	0.99	1.01	1.04	

A46. The flood control benefits for the project are a combination of benefits derived from a reduction of flood losses, changed land use and more intensive land use. Each of these three categories should be re-investigated by the Corps of Engineers and the Soil Conservation Service. It is certain that the category of "reduction of flood losses" would increase, but the magnitude is unknown at this time.

A47. In view of the Appalachian Studies program, there is a possibility that expansion type benefits or secondary benefits may be acceptable by the time an "Authorization Report" is prepared. The category of "more intensive land use" would produce an estimated increase of 8,360 tons of crops which would result in an increase workloads for the regional cannery industry. The magnitude of this crop increase and added wages to the regional economy is shown in the following table.

Estimated Crop Increase Due to Flood Control

Crop	Increase Crop		Increase Labor	
	Acres	Tonnage	Hours	Wages
Beets	400	4,800	55,000	\$ 90,800
Peas	400	600	7,000	11,600
Snap Beans	400	560	6,000	9,900
Sweet Corn	400	2,400	28,000	46,200
TOTALS	1,600	8,360	96,000	\$158,500

A48. The above data should show that the conclusion of the Coordinating Committee with respect to the Canaseraga multiple-purpose project is warranted at this time.